

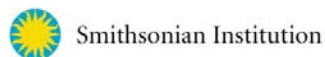
## National Science Resources Center

THE NATIONAL ACADEMIES  Smithsonian Institution

The **National Science Resources Center** was established in 1985 by the Smithsonian Institution and the National Academies to improve the learning and teaching of science for all children in the United States and throughout the world. The prestige and credibility of these two world-renowned institutions provide the NSRC with access to research, scientific expertise, and resources to inform our work, as well as an opportunity to engage and catalyze educators, business people, and scientists in all aspects of science education reform.



**Los Alamos National Laboratory** is a premier national security research institution, managed by Los Alamos National Security LLC (LANS) for the U. S. Department of Energy's National Nuclear Security Administration. The people of Los Alamos continually work on advanced technologies to provide the United States with the best scientific and engineering solutions to many of the nation's most crucial challenges. Since its creation in 1943, the primary responsibility of the Laboratory is assuring the safety and reliability of the nation's nuclear deterrent. Though the world is rapidly changing, this essential responsibility remains the core mission.



The **Smithsonian Institution** was established in 1846 with a mission of increasing and diffusing knowledge. For 160 years, the Smithsonian has used its unique, public accessible collections, research, and staff to inform, educate, and inspire a diverse public. In doing this, it has become one of the most widely recognized institutions in the world for both its contributions to science and its unparalleled ability to make its research and collections accessible to people of all ages.

**THE NATIONAL ACADEMIES**  
*Advisers to the Nation on Science, Engineering, and Medicine*

The **National Academies** are comprised of three academies—the National Academy of Sciences, National Academy of Engineering, and Institute of Medicine—and their operating arm, the National Research Council. These institutions work outside the framework of government to ensure independent advice on matters of science, technology, and medicine.

# GOALS

- **Review** the state of science education and become familiar with available resources documenting the challenges of effective programs.
- **Develop** a shared vision for effective K-16 science learning and teaching through hands-on, research-based science experiences and visits to virtual classrooms.
- **Learn** about research and best practices that support that vision.
- **Discuss** the characteristics of effective programs at the district and state levels.
- **Understand** the critical role of scientists and engineers in advancing K-16 science

# LOGISTICS & INFORMATION

## LOCATION

**Courtyard by Marriott,  
Santa Fe**

3347 Cerrillos Road  
Santa Fe, NM 87507  
Telephone: 505-473-2800  
Fax: 505-473-4905



## TIMES

The program begins on Tuesday, April 10, 2007 at 4:00 pm with registration and reception and adjourns at 12:30 pm on Friday, April 13, 2007.  
**\*Times are subject to change.**

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# 2007 NATIONAL SYMPOSIUM FOR SCIENTISTS AND ENGINEERS

*A Strategic Program to  
Develop Informed Leadership for  
Changing the Course of  
K-16 Science Education*



**SANTA FE, NM  
APRIL 10-13, 2007**

**Program @ a Glance**

**Supported by  
Los Alamos National Laboratory  
U.S. Department of Energy**



## TUESDAY, APRIL 10

- 4:00 p.m. **Registration & Reception**
- 6:00 p.m. **Opening Remarks**
- Bill Richardson** (*Invited*)  
Governor  
New Mexico
- 6:30 p.m. **Welcoming Remarks, Introductions & Overview of Conference Program and Goals**
- Sally Goetz Shuler**  
Executive Director  
National Science Resources Center

## WEDNESDAY, APRIL 11

- 7:00 a.m. **Registration & Continental Breakfast**
- 8:00 a.m. **Opening Remarks**
- Terry Wallace**  
Principal Associate Director for Science, Technology & Engineering  
Los Alamos National Laboratory
- Introductions and Meeting Facilitation**
- Mike Benner**  
Director, Agricultural & Environmental Education  
Milton Hershey School

### I. Understanding the Breadth and Depth of the Problem

- 8:30 a.m. **What is the state of K-16 science learning and teaching?**
- Sally Goetz Shuler**  
Executive Director  
National Science Resources Center
- 9:30 a.m. **What is the impact of the current K-16 science education system on the workforce pipeline & the scientific & technological literacy of our citizens?**
- S. Anders Hedberg**  
Director  
Bristol-Myers Squibb Foundation
- 10:15 a.m. **Break**

### II. Examining the Research Supporting Effective K-16 Science Learning and Teaching

- 10:30 a.m. **What is an example of learning and teaching that aligns with research? (3 sessions)**
- A. **Smith Holt**  
Director (Former)  
Center for Science Literacy  
Oklahoma State University
- Mike Benner**
- B. **Christos Zahopoulos**  
Research Professor & Dir.  
Science Technology and Engineering Education  
Northeastern University
- Brenda Terry**  
Interim Executive Director  
Alabama Mathematics, Science, and Technology Education Center
- C. **John Brandt**  
Director  
Greenhouse Concept & Strategic Initiatives  
Bayer Corporation
- Carol Kubota**  
Associate Professor of Education  
University of Washington-Bothell
- 12:30 p.m. **Lunch**
- Keynote Speaker David Evans**  
Under Secretary for Science  
Smithsonian Institution
- 1:45 p.m. **What evidence currently exists about science education programs that are effective?**
- Bill Watson**  
Research Assistant  
George Washington University
- 3:00 p.m. **Break**
- 3:15 p.m. **What research is known about the preparation of competent K-16 teachers & what are the characteristics of an effective teacher preparation program? -Panel Discussion**
- Carey Kopay**  
Executive Director  
Edward Teller Education Ctr.  
Lawrence Livermore Nat. Lab.
- Carol Brown**  
Co-Founder & Master Teacher  
NM Math & Science Academy

- 3:15 p.m. **Panel Discussion Continued**
- Ramon Lopez**  
Professor  
Dept. Physics & Space Sciences  
FL Institute of Technology
- Karin Wiburg**  
Asst Dean, Educational Research  
New Mexico State University
- 4:45 p.m. **What additional research is needed to advance the current system?**
- Plenary discussions from panel questions and answers
- 5:30 p.m. **Adjournment**
- 6:30 p.m. **Reception and Dinner**
- Keynote Speakers**
- Jeff Bingaman** (*Invited*)  
U.S. Senator from New Mexico
- Geoffrey West**  
President & Distinguished Professor  
Santa Fe Institute

## PROGRAM @A GLANCE

### THURSDAY, APRIL 12

- 7:30 a.m. **Continental Breakfast**
- 8:30 a.m. **Opening Remarks**
- Pete Domenici** (*Invited*)  
U.S. Senator from NM
- 9:00 a.m. **What research currently exists about how people learn science?**
- Suzanne Donovan** (*Invited - Video Conference*)  
Editor, *How People Learn*  
National Research Council
- 10:15 a.m. **Break**
- Investigating the Characteristics of Effective K-16 Science Education Programs**
- Development of Competent Teachers**
- 10:30 a.m. **What strategies and resources are required to develop competency in teachers?**
- Caroline Kiehle**  
Asst Dir., Professional Dev.  
Institute for Systems Biology

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**SANTA FE, NM**  
**APRIL 10-13, 2007**

### 11:15 a.m. **How can scientists and engineers make effective contributions in this area?**

#### Panel Discussion

**Ray Orbach** (*Invited*)  
Under Secretary for Science  
U.S. Department of Energy

**Terry Wallace**  
Principal Associate Director for Science, Technology & Engineering  
Los Alamos Natl Laboratory

**Christos Zahopoulos**  
Research Professor & Dir.  
Science Technology and Engineering Education  
Northeastern University

**John Knezovich**  
Director, Ctr. For Accelerator Mass Spectrometry  
Lawrence Livermore Natl Lab  
Director, UC Toxic Substances Research & Teaching Program

### 12:30 p.m. **Lunch**

#### Networking Opportunity

### Development of Research-based Instructional Materials

### 1:45 p.m. **Exemplary National Science Foundation-Supported Elementary, Middle, and High School Science Instructional Materials**

#### Showcase instructional materials from:

Elementary  
Middle School  
High School

### 3:00 p.m. **Break**

### Establishing a Supporting Environment - Infrastructure

### 3:15 p.m. **What infrastructure is required to support competent K-16 teachers to use exemplary instructional materials?**

**Sally Goetz Shuler**  
Executive Director  
National Science Resources Ctr.

### 4:15 p.m. **How can scientists and engineers make effective contributions to the development and implementation of research-based instructional materials?**

#### Participant discussion and recommendations

### 4:45 p.m. **Poster Session**

## FRIDAY, APRIL 13

### 8:00 a.m. **Opening Remarks**

**Veronica Garcia** (*Invited*)  
Secretary of Education  
New Mexico

### Lessons Learned from Scientists and Engineers Working to Improve K-16 Science Education Programs

### 8:30 a.m. **What are examples of the effective role of scientists & engineers in statewide initiatives?**

**Jeff Estes**  
Manager  
Office of Science and Engineering Education  
Pacific Northwest National Laboratory (Battelle)

**Phyllis Buchanan** (*Invited*)  
Manager  
Center for Collaborative Research & Education  
DuPont

**John Brandt**  
Greenhouse Concept & Strategic Initiatives  
Bayer Corporation

**Tom Bowles**  
Science Advisor to New Mexico Governor Bill Richardson  
State Capitol Building

### 10:30 a.m. **Developing Recommendations and Action Plans**

### 11:30 a.m. **Lunch**

#### Speaker

**Kurt Steinhaus**  
Education Policy Advisor  
to New Mexico Governor  
Bill Richardson



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